



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

✓

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/848,933	05/19/2004	Michael Lewis	LLPI27US	5697
29393	7590	05/15/2007		
ESCHWEILER & ASSOCIATES, LLC			EXAMINER	
NATIONAL CITY BANK BUILDING			TRAN, KHANH C	
629 EUCLID AVE., SUITE 1000				
CLEVELAND, OH 44114			ART UNIT	PAPER NUMBER
			2611	
			MAIL DATE	DELIVERY MODE
			05/15/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/848,933	LEWIS, MICHAEL
	Examiner Khanh Tran	Art Unit 2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### **Status**

1) Responsive to communication(s) filed on 19 May 2004.

2a) This action is **FINAL**.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### **Disposition of Claims**

4) Claim(s) 1-19 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1 and 10 is/are rejected.

7) Claim(s) 2-9 and 11-19 is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### **Application Papers**

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 19 May 2004 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### **Priority under 35 U.S.C. § 119**

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### **Attachment(s)**

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.

5) Notice of Informal Patent Application

6) Other: \_\_\_\_\_.

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to because "the unlabeled rectangular box(es) in FIGS. 2-8 shown in the drawings should be provided with descriptive text labels".

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency.

Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Claim Objections*

2. Claim 19 is objected to because of the following informalities: the claimed "internal memory" in line 2 needs to be defined in the original disclosure, e.g. ROMs, RAMs, EPROMs, EEPROMs, optical cards, flash medium, hard drives .... Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davidsson et al. U.S. Patent Application Publication No. U.S. 2002/0101840 A1.

Regarding claim 1, Davidsson et al. method and apparatus for determining and/or compensating for a time drift between sample clocks of a transmitter and a receiver in conjunction with transmission of plural modulated signal carriers over an air or radio interface.

In paragraph [0050], FIG. 4 illustrates a radio receiver 30 having a demodulation section 50(4), which utilizes channel estimation unit 112 and preamble directed frequency offset estimation 102, and a timing correction unit 100(4). In paragraph [0054], the timing correction unit 100(4) estimates a timing drift value  $t_{sub.0}$  and compensates for the timing drift value in the frequency domain by applying an

appropriate phase factor to a subcarrier to update the frequency domain channel estimate and thereby provide a time corrected frequency domain channel estimate on line 120 to demodulation unit 114(4). In view of the foregoing disclosure, channel estimation unit 112 and preamble directed frequency offset estimation 102, and a timing correction unit 100(4) provide phase and frequency tracking.

Davidsson et al. does not explicitly disclose the pilot-based tracking unit as claimed in the application claim.

In paragraph [0048], because, in differing embodiments, because Davidsson et al. suggests that the timing drift compensation can be performed in accordance with various techniques, example, decision directed frequency offset estimation, or pilot aided frequency offset estimation, therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Davidsson et al. teachings to employ pilot aided frequency offset estimation and hence the tracking unit is pilot-based.

In paragraph [0080], FIG. 6 illustrates an further extension of FIG. 4 in which a radio receiver 30 having a demodulation section 50(6) which utilizes channel estimation and decision directed frequency offset estimation. Wherein in FIG. 6 embodiment, the demodulation section 50(6) includes a decision directed unit, also referred to herein as decision directed frequency offset estimation unit 150(6). In paragraph [0090], the output subcarrier demodulation unit 114 is remodulated by mapping unit 162 to obtain the remodulated symbols  $A_m[k]$ . The mapping unit 162 performs the remodulation of the output  $u[k]$  by a mapping performed according to the HIPERLAN/2 standard. The

remodulated symbols  $A_{\text{sub}}.m[k]$  are multiplied by multiplier 164 with the input on line 156 (e.g., the channel estimation  $H_{\text{sub}}.m[k]$  of each subcarrier for the FIG. 8 embodiment). In light of the aforementioned disclosure, the decision directed frequency offset estimation unit 150(6) after demodulation unit performs data-based phase and frequency tracking.

As further disclosed in paragraph [0027], because the timing correction unit 100(4) estimates a timing drift value and compensates for the timing drift value in the frequency domain to provide a time corrected frequency domain modulated signal, therefore, the timing correction unit 100(4) is operable to gradually reduce an effect of the pilot-based tracking unit.

Regarding claim 10, claim 10 is rejected on the same ground as for claim 1 because of similar scope.

#### ***Allowable Subject Matter***

4. Claims 2-9 and 11-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Frank et al. U.S. Patent Application Publication No. 2004/0170227 A1 discloses "Frequency correction for a multicarrier system".

Crawford U.S. Patent 6,633,616 B2 discloses "OFDM pilot tone tracking for wireless LAN".

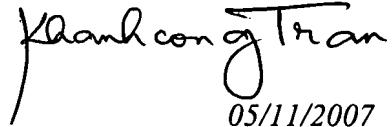
Peeters et al. U.S. Patent 6,628,738 B1 discloses "Method of arrangement to determine a clock timing error in a multi-carrier transmission system, and a related synchronization units".

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 571-272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KCT

  
05/11/2007  
Khanh Tran  
Primary Examiner, AU 2611